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The Little Flower

A little plant it was, and very plain
Among a host of flowers, bright and tall,
Who, greedy, stole the sunlight and the rain,
And scarce would let the wee plant grow at all.

Its feeble stalk was bent, and each leaf hung.
A weary little plant, as though it knew
It never could be strong and bright among
The brilliant fellows that about it grew.

I dug it up and took it on to where
My garden bloomed, that in a border low
With other little plants and sunny air,
The little plant might have its chance to grow.

And now, though stronger blooms are gay and tall
In other gardens down the sunny street,
I find them fair, but envy not at all,
For oh—my little flower is very sweet!

—HEATHER COLLIER

An Experiment in the Logical Memory of Subnormals[1]

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During the summer and fall of 1927, at the invitation of The Training School at Vineland New Jersey, investigation was made of the memory of about 110 children residing in that institution.

Obviously, in this relatively short period of time it was impossible to cover more than a narrow field, and there were numerous difficulties to be overcome, not the least of which was the choice of a method which would take into account the fact that the subjects were living an institutional life and also that many of them would be seriously handicapped by speech defects which rendered the understanding of their responses difficult.

The test material chosen consisted of a very simple story containing descriptions of concrete situations and a dramatic course of events. This was read to the subjects and at the same time colored pictures, illustrating some of the main points of the story were presented, one at a time, in their proper order. The story, in which the characters were animals endowed with human powers of speech and action, belonged to a certain extent to the world of fiction, but was in general accordance with the experience of everyday life. The test put into play factors prominent in social life, and in addition to being a test of primitive and concrete logical memory it involved rote memory, imagination, power of sustaining attention and linguistic ability, although the latter was not of great importance, as the subjects were tested by questions which were answerable by single words or even by signs.

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1 Editor's Note: This article is the substance of an informal report submitted by Dr. Hegge at the conclusion of his preliminary experiments in the field of logical memory of subnormal children, conducted at the Vineland Laboratory in the summer and fall of 1927. Since that time Dr. Hegge has conducted similar experiments at the Wayne County Training School, the results of which he expects to publish elsewhere as a more complete report of the entire investigation. In publishing the report of the preliminary work at Vineland, Dr. Hegge asks us to emphasize particularly the tentative nature of the procedure and the limited conclusions to be drawn from these data in view of the preliminary nature of the experimental study. However, these results seem to us to suggest such important implications that we persuaded Dr. Hegge to permit us to publish this preliminary statement in the Bulletin because of its significance for our readers. The more complete results of the entire study are somewhat more intricate and will probably appear in one of the more technical journals.

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It was found necessary to dismiss a few subjects because of deafness, muteness or very bad speech defect. Subjects whose speech was markedly defective, but to some degree intelligible, were *not* dismissed, nor were shyness or lack of interest considered reasons for dismissal, although in some cases these may have been sufficiently great to have interfered with the results.

There was wide variation in the life ages of the subjects, a great many of whom were not school children, but were employed in different departments in the institution, and had not received academic training for some years. The Stanford Binet mental ages ranged between 2.6 and 9.7 years except for one case whose mental age was 15.0, this boy being above average insofar as intelligence is concerned. All of the subjects were boys with the exception of one girl who was given a special test with disconnected words.

It is possible that the application of this test may contribute to the solution of the problem as to the ability in these children *to profit by experience and training.* By rendering it progressively difficult with each application, it may be applied several times. It appears that children at a mental age of about five years, who profit very little from school training, *may* in this test profit to a considerable extent by experience and training. This result may be applied in school teaching or to the educational situation at home or in the cottage. It is possible in some cases to transform the problems and tasks to the imaginative and logical level and sphere of interest involved in the test; to make stories or plays out of them. As is well known, this procedure is also widely used, and the possibility of applying it to particular problems should always be kept in mind.

To make possible the examination of a large number of subjects in a relatively short period of time, the test was applied in most cases only once to each subject, and in order that the work might be carried on without a stenographer, the request of a spontaneous report, which was made in the first experiments, was dropped. The examination, as indicated above, was made only with the aid of a questionnaire covering all points mentioned in the story. The answers were scored plus, or minus, or plus-minus, and were then analyzed quantitatively as

to the degree of meaning or type of meaninglessness. The result, omitting statistical tabulations, may be briefly summarized as follows:

1. The form of memory tested seems to have a fairly high correlation with general intelligence, the correlation between test scores and Binet mental ages of ninety-eight subjects being .757, with a probable error of only 0.0289.

2. Probably due to special abilities or disabilities such as extraordinarily good or defective verbal or imaginative memory, extraordinarily high or low scores may be obtained. The former are especially interesting, indicating as they do the existence of a valuable mental ability which, on account of mental age, might escape attention and otherwise not be properly taken account of and trained.

3. More detailed examination of the (unpublished) tables of scores reveals:

(a) No total failure above M. A. 5.3.

(b) Total failures seem to occur relatively seldom above M. A. 4.5.

(c) Memory answers of the type here required may be obtained at M. A. 3.5, but occur relatively seldom below M. A. 4.5.

(d) Very good scores, corresponding to the median score of M. A. 7 to 8, may be obtained at M. A. 4.5.

(e) M. A. 4.5 seems to represent a level at which, under these conditions, definite memory responses may be fairly well expected.

(f) A second level seems to exist at M. A. 7. This is shown in the median score and in the distribution of scores which differ distinctly from the median score and the distribution of scores of the group represented by children of M. A. 4.5 to 6.9.

4. Subjects with a mental age below 7 often show little ability to adapt their answers to knowledge which they actually possess. This fact largely explains the correlation indicated between memory and intelligence. The unintelligent may possess the knowledge required for appropriate reaction, but lack the capacity of applying this knowledge.

The relation between logical memory and intelligence has two aspects; first, intelligence may be considered a factor in

logical memory; secondly, logical memory may be considered a factor in intelligence. In regard to the first point, there are two reasons for considering intelligence a factor in logical memory; first, because the intelligent may comprehend and memorize logical relations better than the unintelligent; secondly, because the intelligent may adapt their reactions better to actually existing knowledge, which last point has been previously mentioned. The analysis of the answers obtained in the test proves that this factor causes a great deal of low-grade, wrong, or nil reactions in children whose mental age is below 7.

5. Many of the wrong answers were meaningless in the respect just mentioned, or in some other respect. They may be called meaningless because:

(a) They do not respond to the question.

(b) They are inconsistent with the actual situation in the story or with knowledge which the subject has or should have regarding the events of the story or regarding what is in general natural and possible according to everyday experience.

6. Causes of meaningless answers are:

(a) The question, a previous question, a previous answer or some previously reproduced idea prevail and prompt the reply.

(b) A new idea which may or may not belong to the story absorbs the interest and prompts the reply.

7. There are different types of meaningless answers typical for the mental ages as follows:

(a) Echololia (repetition of the last two words of the question).	Typical for M. A. 3.5 or below.
(b) Yes or No as irrelevant answers.	
(c) Repetition of other words or ideas of the question itself as irrelevant answers.	Typical for M. A. 3.6 to 6.9.
(d) Repetition of previous questions, answers or ideas as irrelevant answers.	Occur from M. A. 3.6 upwards to a limit not accurately determined.
(e) A new idea, not belonging to the story, causing an irrelevant answer.	
(f) A new idea, belonging to the story, causing an irrelevant answer.	
(g) Relevant answers, but inconsistent with knowledge which the subject has or should have.	

8. As to the relation of high-grade and low-grade reactions (from the qualitative point of view, *number* of meaningless answers also considered) to mental age, the reactions may be listed as follows: from mental age 3.5 or below, only low-grade reactions; from mental age 3.6 to 6.9 middle-grade as well as high-grade reactions; from mental age 7.0 upwards, only high-grade reactions, according to the present results. Meaningless answers occurring above mental age 7 are exceptional, generally not of a very low-grade type, and might as a rule be due to distractions such as often occur even in normal children.

9. In regard to the relation between quality of reactions and scores it may be stated that all very low-grade scores accompany a very low-grade quality of reaction, and likewise, very high-grade scores accompany correspondingly high-grade quality of reaction.

10. In other words, the qualitative results are in harmony with the quantitative results and correspond to the correlation with general intelligence stated. The mental age is not, however, unfailingly prognostic as to ability to avoid meaningless answers. From a mental age of 7 upwards, it is true, good judgment is very likely to be shown. And from mental age 3.5 downward there seems to be a corresponding predominance of very low-grade answers. But between these two levels the mental age is not predictive of the very high-grade, middle-grade or even occasionally very low-grade reactions which may be obtained on the test, as concerns the quality of the incorrect answers. A boy at mental age 4.5 may show far better judgment than many boys at 6.8, probably largely due to temperamental differences. And as general intelligence must be a very strong factor in determining the quality of the wrong answers, the problem arises as to whether some extent of improvement in judgment might not be obtainable after proper training in some cases.

11. As to what extent children may be expected to profit from hearing stories, fables, and the like, of a very simple kind we may suppose: (1) mental ages below 4.5 seem unlikely to profit; (2) children of mental age 4.5 to 6.9 *may* profit, especially if the story is told several times, and (3) children with mental ages from 7 upwards seem likely to profit insofar as memory and comprehension are conducive to profit.

New Books

AMERICAN PSYCHIATRIC ASSOCIATION. *Proceedings of the First Colloquium on Personality Investigation.* Baltimore, The Lord Baltimore Press, 1928. 102 pp.

This is a verbatim account of the Colloquium, called by the American Psychiatric Association, of various representatives of the Social Sciences, to meet with the psychiatrists and discuss questions of overlapping and joint interest "with view to greater cooperation among those concerned in studying the nature and influence of cultural environments." The discussions are informal and interesting, and far less ponderously technical than might be expected.

The book closes with two Appendices. Appendix A, by George E. Partridge, deals with "Psychopathic Personality and Personality Investigation." Appendix B, "The Problem of Adequate Personality Records: A Proposal" by Harold D. Lasswell, covers briefly methods of psychoanalysis and offers suggestions and recommendations for the securing of successful and thorough analyses.

"All learning is a reaction to wants and desires. Learning, to be effective, must always take the form of satisfying a want of the learner. Consequently, the first prerequisite of learning must be the finding of a motive. It happens so often that the mother has a perfectly definite idea of something which she believes the child should learn. Failure on the child's part may be due not to any inherent learning difficulty on the part of the child, or any teaching difficulty on the part of the parent, but rather to the parent's inability to make the motive sufficiently real to the child."—Marion M. Miller—Child Study.

The Lindbergh Club has begun its regular meetings this fall. This club is made up of about twenty of the young, active boys in Branson Cottage. It is hard to estimate the value of such work with this class of boys in training for responsibility, good example, personal and institution pride.

Mental Growth of Low Grade Feeble-Minded

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The intelligence growth curve of the subnormal child is receiving great consideration in the research problems of the day, and various studies have been made, chief among which are the works of Doll and Kuhlmann. Time will not be taken to discuss other research by Binet, Terman and Goddard, but Raymond (9) has found that there is a large percentage of feeble-minded children, especially of the moron level, who have shown an increase in intellectual capacity after the age of 16. This conclusion was based on the retests of 839 children in an experiment authorized by the Fernald School at Waverly, Massachusetts.

Miss Dorothy Bassett of the Vineland State School is at present making a study of the mental development of feeble-minded above the chronological age of 14, while Miss Elizabeth Jewell (3) of the Vineland Training School is concerned with the mental growth of borderline feeble-minded as found at that school. No special work with the lower levels of intelligence, however, has attracted attention as yet.

Accordingly, the aims of the present study are —1. to locate the chronological age at which the mental development of the idiot may be expected to cease, 2. to study the constancy of the IQ of the idiot, and 3. to determine, if any, the degree of correlation between chronological age and the onset of deterioration.

It might be well here to note that Kuhlmann and Doll are in disagreement as to the first point. The former (4) maintains that "the average growth curves indicate that idiots develop to the age of 15, inclusive," while Doll (1) states his theories as follows:

Final Mental Age	1	2	3	4	5	6	7	8	9	10
Age of Arrest	?	?	7	11	11	12	12	12	15	15

A psychological survey was made of the Colony for Feeble-Minded Males at Woodbine, New Jersey, in May 1923, under the direction of Dr. E. A. Doll, then Director of the Division of Classification and Education, Department of Institutions and

Agencies. Since that time examinations have been made of all admission cases, special problem cases, and those being considered for transfer. Thus over a period of approximately 3 years there have been 51 idiots retested at this Colony. *It is these retests, conducted as part of the ordinary routine of the Colony, that now serve as the basis of this study.

In all examinations the Kuhlmann Revision and Extension of the Binet-Simon Scale was used. There was no selection made within the institutional group. Included in this study are all types, without regard for color, nationality, age, habits, or ability to walk, talk or work.

Table 1

Months between test:	1-4	5-9	10-14	15-19	20-24	25-29	30-34
Number of cases:	1	2	0	4	8	18	18

Table 1 shows the time interval between tests. This is necessarily variable as all the retests were made as part of the general routine of the Colony. The shortest time interval is 4 months and there are 3 cases whose time interval is 28 months. There are 70% of the cases having a time interval between the 2 tests of from 23 to 25 months so that, in 36 out of 51 cases, 2 years elapsed between the tests. In only 3 cases, or 6%, was the interval shorter than a year. Between the first and second year interval 12 cases, or 24%, were examined.

Table 2

Chronological Age:	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Number of cases:	10	9	11	5	6	5	3	1	1

Table 2 reveals that 30 cases, or more than one-half, are under 20 years of age. Eleven cases, or 20%, were between the ages of 20 and 30 years, and 8 cases, or 15%, were in the 30 year group. Only 2 cases had reached 40 years of age. Eleven were between the ages of 15 and 20. Of the 51 cases 19, or 37%, were under 14 years of age and might therefore be considered trainable.

In order to make comparisons between different age groups, the writer has divided the cases into 4 main groups: (1) those under 14 years of age, (2) those over 14 years of age, (3)

* According to Maxfield's (7) suggestion, adults with a mental age below 3.3 years and children under 13.5 years, with an IQ below 25, are classified as idiots.

those under 20 years of age (which, of course, includes the first group), and (4) those over 20 years of age. The purpose of this grouping is to determine at what age the mental growth of the idiot ceases. The following gives the central tendencies per group:

Table 3

	Cases under 14	Cases under 20
Median change per month	-.023	-.057
Modal change per month	0	0
	Cases over 14	**Cases over 20**
Median change per month	-.063	-.063
Modal change per month	0	-.063 -.071
	Total Cases	
Median change per month	-.063	
Modal change per month	0	

No progress is depicted, then, through the lens of the median variation. Not only is there an absence of progress but an actual decrease of the mental ages observed.

There were 6 boys under the age of 14 who showed signs of progress in mental age. The ages of these boys are pertinent to the question—when does mental development cease? All except 1 were 10 years of age or below.

Table 4

	Under 14	Under 20	Over 14	Over 20	Total
Increased IQ on 2nd test	3	4	6	5	9
Constant IQ on 2nd test	1	5	6	2	7
Decreased IQ on 2nd test	14	21	21	14	35

In table 4 are indicated the increase, decrease, and constancy of the IQ. Here we find that of the 18 cases under 14 years there are only 3, or 17%, whose IQ increases on the 2nd test, and between the ages of 15 and 20 only 1 case shows an increased IQ. Of the total number of cases 9 show some increase, 7 remain the same, and *35 decrease.*

Table 5

	Under 14	Under 20	Over 14	Over 20	Total
Increased MA on 2nd test	6	7	6	5	12
Constant MA on 2nd test	3	7	5	1	8
Decreased MA on 2nd test	9	16	22	15	31

If we compare the number of cases showing progress per MA, we find under 14 years of age 6 boys, or 33.3% of that group, showing progress on their second Kuhlmann test. Of these, all except one were 10 years or under. Thus only one boy between the ages of 15 and 20, and 6, or 18.2% above the age of 14 showed any progress.

Therefore the results of this study would seem to indicate that the mental growth of the idiot ceases at a very early age. While there may be slight progress in a number of cases over 14, the amount of progress is exceedingly small, and in the majority of cases there is deterioration rather than increase after that age. The greater part of the mental growth of the idiot appears to come early in life, probably under 10 years of age. This agrees with Stern (10) who assumes that the age of cessation of mental development changes markedly with grade of intelligence, the idiot grade ceasing to develop relatively very soon after birth. On the other hand Kuhlmann (4) states, "On the whole, the mental age ceases to increase between the ages of fifteen and eighteen, the idiot grade ceasing development about three years earlier than the borderline group".

If the mental growth of the idiot ceases at an early age, and his mental age tends to remain at about the same level, his IQ will gradually decrease. Kuhlmann has found that the intelligence quotient decreases with age, the average yearly decrease for idiots being .37. If this is true, it would necessarily affect the diagnosis and prognosis in individual cases. Mateer (6) states that only careful refinement of observation methods will enable us to extend a statement of a child's ability, as indicated by tests, into a prognostic evaluation. "At two an idiot, an imbecile, a moron and a normal boy all seem practically the same. Then an idiot drops out of the race, stays at that level. Somewhere in the next four or five years the imbecile falls behind, but the moron may be even ten or eleven before he evidences any real deficiency on our present system of tests. Yet the difference has been there all along. The moron was as feeble-minded, potentially, at the age of two, as at twelve. The normal child was as surely normal."

Minogue (8), in her study of the constancy of the IQ, writes "It seems safe to assume that the IQ is constant for the average child..... It is not, however, these 'average' children, but rath-

er the deviates, the subnormal and the supernormal, who constitute the greatest problem in the social and educational systems. And it is in regard to these exceptional children that we ask most frequently, "Will their IQ's remain constant?" She has found that 91% of the imbeciles and morons showed a variation of no more than 10 points. (8) "The variation that appeared tended to be a loss rather than a gain. The greatest frequency of variation in IQ was in children under 12 years and the greatest constancy was in adults over twenty-one years of age."

Figure 1, giving the extent of IQ variations, shows that the greatest amount of individual fluctuation is a decrease of 10 points, while in 11 cases there is a variation of more than 5 points. Of these cases, all are decreases except one which shows an increase of 9 points. A study of this case shows great physical change due to medical and hygienic attention received after admission to the Colony. Increased physical health might therefore account for some mental improvement. The 11 cases mentioned constitute a percentage of 21 with a variation of more than 5 points. Thus, of the whole group, 86% show variation. Of these there are 65% which vary only slightly, or below 5 points. This agrees with Minogue's statement, "There is evident an inverse relation between the degree of change and the frequency with which it occurs. Slight changes are much more likely to take place than marked gains or losses." We find they occur in a great number of cases but that they are not generally marked variations. In dealing with an idiot child, however, these variations, which might seem slight in a child of higher mental level, are of great importance. The coefficient of correlation between the IQ's of the first and second tests, according to the rank difference method, is .964 with a probable error of ‡.016.

Since the IQ remains constant in only 13.7%, increases in 17.6%, and decreases in 68.6% of the cases, our conclusion is that the IQ of exceptionally retarded children is not constant in a sufficient number of cases to warrant a definite statement of prognosis or diagnosis. All such statements must be tentative. The IQ tends to decrease as the child becomes older. This is because the mental growth of an idiot usually ceases at an early chronological age and before he has reached an adult level.

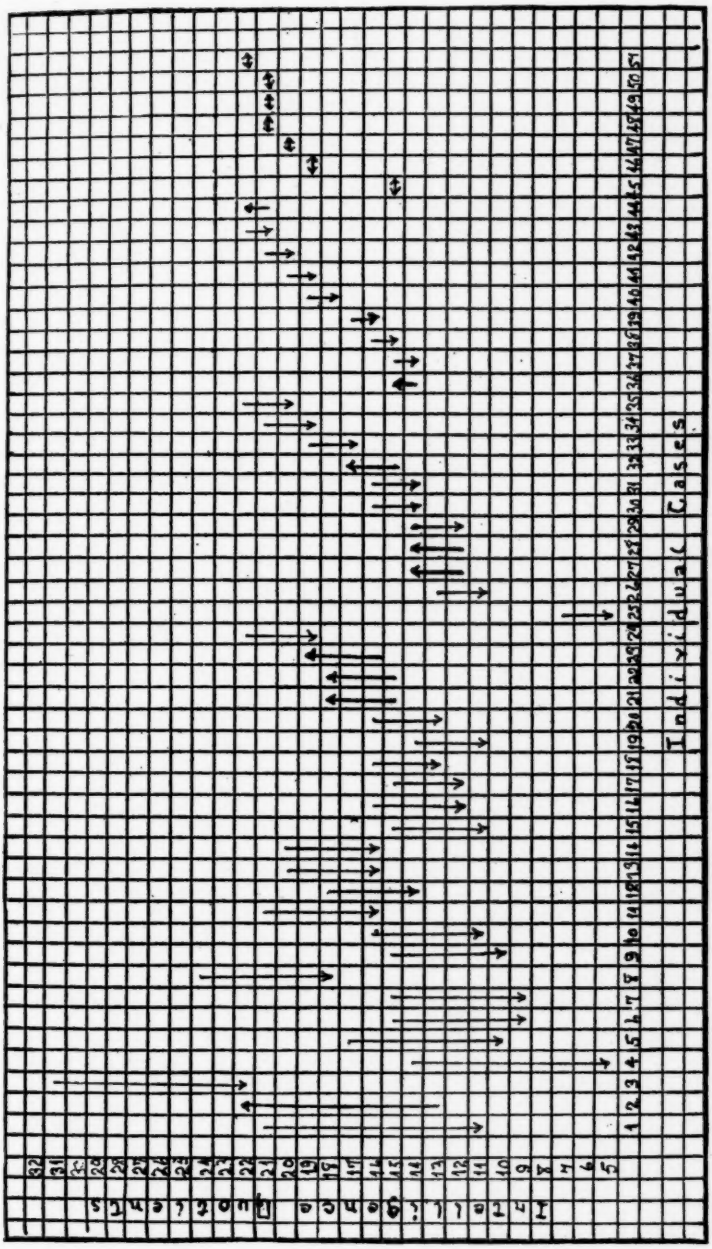

FIGURE 1. EXTENT AND DIRECTION OF "I.Q." VARIATION PER CASE

When we consider the relationship between chronological age and onset of deterioration, we may safely say that deterioration sets in at an early age. With our children under 14 we have 9 cases, of 50%, whose mental age in the second test is lower than that on the first. As we study results with the older cases we note an inverse relation between chronological age and mental age.

Before making a general summary of these conclusions, the following limitations of this study should be considered:

1. The small number of cases studied.
2. The fact that only one retest was administered in each case.
3. Differences due to different examiners.
4. Possible fluctuations due to temperament of the child.

Conclusions

With these limitations in mind, our tentative conclusions are summarized as follows:

1. The mental growth of the idiot ceases at a very early age, possibly under 10 years. While there may be slight progress above that age, the amount of progress is exceedingly small and in the majority of cases there is deterioration rather than growth.

2. The IQ of young retarded children is not constant in a sufficient number of cases to warrant a definite diagnosis or prognosis based on that alone. The IQ tends to decrease as the child becomes older.

3. There is mental deterioration in idiots which probably begins at an early chronological age.

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Notes From the Woodbine Colony
Barrels of Fun

E. L. Johnstone

Look back on your own childhood. An upturned chair made a beautiful boat; a soap box could be utilized as a thundering chariot; a broom became a veritable Pegasus when properly handled. This looking back on childhood was the inspiration for what has turned out to be a most successful group of outdoor play apparatus for the idiotic boys at the State Colony at Woodbine.

Half a dozen empty barrels, a large hogshead and two good sized packing boxes, liberally coated with red, blue and yellow paint, have transformed a play field of ordinary aspects into a veritable circus ring for the fifty odd boys of two and three years mentality in Number Five Cottage.

At Woodbine, where happiness, cleanliness and health are the prime considerations in caring for four hundred boys of very

low mentality, a play program is being stressed. Through play, the administration hopes to install sense and habit training, to promote neuro-muscular coordination and to teach better response and better cooperation. Because play is the foundation of the whole training program, every available kind of play material which can be utilized by these children, is being sought.

Swings, seesaws, spring boards and the conventional playground apparatus are in constant use, but there is a demand for something different from that. As a first step in finding that different thing, the barrels and packing boxes were dumped into the play yard one morning. The response on the part of the children was immediate, startling and uproarious. En masse the group charged the gaily painted objects and began a voluntary program of rolling, dumping, climbing and tumbling antics such as could just naturally occur only to a bunch of small boys. A few minor scratches, a small bruise or two and a half dozen disagreements between the boys were forgotten in a moment. The possibilities with the apparatus were of prime importance that such inconsequential things as hurts were promptly overlooked.

In the month that this sort of "toy" has been in use at Woodbine, its popularity has not decreased. Every day something new is thought of; boxes can be anything from desert islands to Indian wigwams. Barrels have an intriguing instability and they even have the virtue of completely collapsing when enough hoops are banged off. A hogshead is a mammoth cave from which issue the growls of pre-historic monsters, waiting to be slain with a rolled-up newspaper.

The cost of such apparatus is negligible. Paint and time are required in addition to the barrels and boxes that bring supplies into every institution. This is just a preliminary step in developing this sort of apparatus. More will be heard along this line.

Sept. 9.—The Holmes-Baker Orchestra of Millville gave a fine concert in Garrison Hall for the benefit of the Sayford and Triangle Clubs. This is the second time these men have come to us in the interest of our boys' and girls' clubs. Besides the concert, enjoyed by all of the children and employees, the inspiration which comes with such interest, about Ninety Dollars were added to the treasuries of the clubs.